

FLEXIBLE HEART VALVE AND ASSOCIATED CONNECTING BAND

Abstract of the Disclosure

A highly flexible tissue-type heart valve is disclosed having a structural stent in a
5 generally cylindrical configuration with cusps and commissures that are permitted to
move radially. The stent commissures are constructed so that the cusps are pivotably or
flexibly coupled together at the commissures to permit relative movement therebetween.
The stent may be cloth-covered and may be a single element or may be made in three
separate elements for a three cusp valve, each element having a cusp portion and two
10 commissure portions; adjacent commissure portions for each pair of adjacent stent
element combining to form the stent commissures. If the stent has separate elements
their commissure portions may be pivotably or flexible coupled, or may be designed to
completely separate into independent leaflets at bioresorbable couples. The cloth
covering may have an outwardly projecting flap that mates with valve leaflets (e.g.,
15 pericardial leaflets) along the cusps and commissures. A connecting band may be
provided that follows the cusps and commissures and extends outwardly. The valve is
connected to the natural tissue along the undulating connecting band using conventional
techniques, such as sutures. The connecting band may be a cloth-covered silicon member
and attaches to the underside of the valve at the cusps to provide support to the stent and
20 to the outer side of the valve at the commissures. The connecting band includes
commissure portions defining generally axial gaps that help permit flexing of the valve.